DOCUMENT RESUME

ED 297 112 CE 050 603

TITLE Keyboarding: Curriculum Guidelines.
INSTITUTION Washington Office of the State Superintendent of Public Instruction, Olympia. Div. of Vocational-Technical and Adult Education Services.
PUB DATE Jul 86
NOTE 39p.
PUB TYPE Guides - Classroom Use - Guides (For Teachers) (052)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Behavioral Objectives; *Business Skills; Courseware; *Curriculum Development; Data Processing Occupations; Evaluation Criteria; Instructional Material Evaluation; *Keyboarding (Data Entry); Learning Activities; Lesson Plans; *Office Occupations Education; *Program Content; Secondary Education; Statewide Planning; *Student Evaluation
IDENTIFIERS *Washington

ABSTRACT

This guide is the product of a project to reassess and update the data entry curriculum used in business and office occupations programs throughout the State of Washington. It is intended to assist teachers and administrators responsible for making decisions affecting first-year keyboarding programs, implementing secondary school keyboarding programs, or evaluating existing keyboarding programs. The guide consists of student learning objectives, keyboarding competencies, and curriculum outlines for level 1 and level 2 keyboarding courses. Appendixes include two leadership examples, three technique evaluation examples, straight copy and number copy grading scales, suggested grading areas and percentages for overall grading, a list of some available software resources, a computer keyboarding software evaluation form, two examples of 10-key pad digit drills, and 10-key pad grading scales. A glossary concludes the guide. (MN)

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KEYBOARDING CURRICULUM GUIDELINES

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KEYBOARDING CURRICULUM GUIDELINES

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July 1986

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FOREWORD

Purpose of the Project

The purpose of the project was to revise and update the 1984 Data Entry Curriculum Guide for keyboarding. This project should serve as a curriculum guideline for keyboarding teachers and administrators. It should be used by people who are responsible for making decisions affecting the first-year keyboarding program. This guide should also be used when implementing a secondary keyboarding curriculum or when evaluating an existing keyboarding program.

The Committee Process

A statewide committee of keyboarding teachers was formed to review the existing curriculum guide. Members consulted, compared, and evaluated current materials in the field and developed a keyboarding course outline and supplementary materials for use in the classroom.

WRITING TEAM

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RECOMMENDATIONS

The committee recommends the following:

1. This report be distributed to vocational directors/administrators and business education departments in all Washington State school districts by fall 1986.

2. A statewide curriculum task force be appointed to revise and update this curriculum guide every two years, with this task force to include at least one member from the State Business Education Program Specialist's Advisory Committee.

INTRODUCTION

All students of Washington State high schools should acquire minimum competence in information processing--specifically, in keyboarding skills.

Keyboarding skill is the foundation for all data processing, word processing, and general office employment of the future. Jobs are being created to meet the demands of new and advanced electronic information processing equipment already being utilized by businesses across the United States. Keyboarding skill allows the employee an opportunity to move into new skill areas, to advance in existing skill areas, or to specialize in information processing. In addition, there are numerous occupations in related fields which require keyboarding competencies.

Course Title: Keyboarding 070303

Course Description: Keyboarding offers basic instruction on an electric/electronic alpha-numeric keyboard, ten-key numeric data-entry pad, and/or microcomputer.

Purpose of Course: To provide basic keyboarding skills, knowledge, and attitudes as a foundation and beginning course in a sequence of courses designed to train students for careers in business.

Course Level: 9th to 12th grade

Course Length: 180 hours (two semesters or three trimesters)

KEYBOARDING 1 AND 2

STUDENT LEARNING OBJECTIVES

The keyboarding student will demonstrate:

1. Appropriate work habits and traits as well as skills.
2. Appropriate touch techniques while operating an alpha-numeric keyboard.
3. A minimum stroking rate of 22 gross words per minute with a maximum of two uncorrected errors per minute on three-minute straight-copy writing by the end of the first semester.
4. A minimum stroking rate of 30 gross words per minute with a maximum of two uncorrected errors per minute on five-minute straight-copy writing by the end of the second semester.
5. An acquaintanceship with the symbol and function keys.
6. An ability to perform word processing and printing functions on a microcomputer.
7. An ability to detect and correct errors.
8. An ability to apply keyboarding skills in the completion of selected projects.
9. An ability to properly care for keyboarding equipment.
10. An awareness of career opportunities involving keyboarding skill.

KEYBOARDING 1 AND 2

KEYBOARDING COMPETENCIES

The keyboarding student will:

1. Use correct keyboarding techniques in the operation of electric and/or electronic typewriters, microcomputers and ten-key pads.

2. Develop minimum keyboarding speed and accuracy.

3. Compose at the keyboard.

4. Format business documents appropriately.

5. Edit and revise text on hard copy or CRT.

6. Produce mailable business documents from rough draft, edited, and script copy.

7. Perform routine maintenance of equipment/hardware.

KEYBOARDING 1

CURRICULUM OUTLINE

Terminal Objectives

(90 hours or one semester)

I. Leadership Development - ongoing with concepts integrated throughout the course (see Appendix A) — 5 hours

A. Work Habits and Traits
   1. Attendance
   2. Punctuality
   3. Positive self-image
   4. Safety-consciousness
   5. Patience
   6. Enthusiasm
   7. Human Relations

B. Skills
   1. Maintain an organized work area
   2. Set and progress toward goals
   3. Follow written and oral directions
   4. Handle work with interruptions
   5. Concentrate amid distractions
   6. Manage time

II. Alpha-Numeric Keyboard - 10 hours on micro-computer required for funding — 72 hours

A. Keyboarding Techniques (see Appendix B)
   1. Posture
   2. Eyes on copy
   3. Hand position
   4. Stroking
   5. Inserting and removing paper

B. Touch Technique (see Appendix B)
   1. Alphabetic keys
   2. Numeric keys

C. Acquaintanceship
   1. Symbol keys
   2. Function keys

D. Speed and Accuracy (see Appendix C)
   1. Structured drill (teacher delivered)
   2. Three-minute straight copy timing
      a. 22 gross wpm minimum
      b. 2 uncorrected errors per minute

E. Microcomputer Operations - 10 hours required for students claimed for funding
   1. Introduction to microcomputers
   2. Introduction to software (see Appendix D)
   3. Word processing functions
   4. Printing

F. Error Detection and Correction
   1. Proofreading
      a. application of methods
      b. application of proofreader's marks
   2. Correcting
      a. manual methods
      b. self-correcting (backspace/strikeover)
      c. text-editing functions

G. Application
   1. Word Division
   2. Letters/envelopes
   3. Memo
   4. Format
      a. simple tables
      b. special-size paper
   5. Reports
   6. Composition at the keyboard

III. Ten-Key Pad - 10 hours minimum required for funding — 10 hours

A. Touch Technique/Number Keys (see Appendix E)

B. Acquaintanceship/Function Keys

C. Speed and Accuracy (see Appendix F)
   1. Structured drill and practice
   2. 70 gross dpm minimum passing grade on one-minute timing

D. Error Detection
   1. Compare tape
   2. Estimate answers

E. Application/Calculations
   1. On invoice
   2. On purchase order
   3. On tables

IV. Keyboarding Equipment — 1 hour

A. Types of Equipment
   1. Electric/electronic alpha-numeric keyboards
   2. Ten-key numeric data-entry pad
   3. Microprocessor

B. Care of Equipment
   1. Professional respect
   2. Dust control
   3. Static control

V. Keyboarding Opportunities — 2 hours

A. Careers

B. Training

KEYBOARDING 2

CURRICULUM OUTLINE

Terminal Objectives

(90 hours or second semester)

I. Leadership Development (ongoing and continued from Keyboarding I with concepts integrated throughout) (See Appendix A) — 5 hours

A. Work Habits and Traits
   1. Attendance
   2. Punctuality
   3. Positive self-image
   4. Patience
   5. Enthusiasm
   6. Honesty
   7. Positive thinking

B. Skills
   1. Follow written and oral directions
   2. Manage time
   3. Handle criticism
   4. Handle stress
   5. Solve problems

II. Work Station Maintenance — 2 hours

A. Care of Equipment and Supplies

B. Organized Work Area

C. Safety

III. Error Detection and Correction — 10 hours

A. Proofreading

B. Correction Methods

C. Use of Reference Materials

IV. Touch-Technique Reinforcement — 5 hours

V. Applications — 46 hours

A. Microcomputer Word Processing Operations (10 hours minimum required for funding)

B. Letter/Envelopes

C. Memos

D. Tables

E. Reports/Manuscripts

F. Forms

G. Composition

VI. Speed and Accuracy (See Appendix C) (20 hours)

A. Structured drill (teacher delivered)

B. Five-minute straight copy timing
   1. 30 gross wpm minimum passing grade
   2. 2 uncorrected errors per minute

VII. Professional Growth (2 hours)

A. Careers

B. Training

APPENDIX A

Leadership Development Example #1

BUSINESS EDUCATION DEPARTMENT NAME_____

YEAR_____SEMESTER 1 2

Teacher A 1 2 3 4 5 6
Teacher B 1 2 3 4 5 6
Teacher C 1 2 3 4 5 6
Teacher D 1 2 3 4 5 6

LEADERSHIP DEVELOPMENT

Leadership and personal development skills are necessary to assist a student moving from the school environment into the work force. When a student from our Business Education program accepts a position in a business establishment, that student also accepts a responsibility for fitting into the social structure and working with the other individuals in that business. According to many business leaders, people lose their jobs, not because they are not technically qualified to keep their jobs, but because they cannot get along with their fellow workers or supervisors within that firm. Employers rightfully expect that a well-trained Business Education program graduate will understand how to fit into the company organization.

For this and many other reasons, leadership development has been made a requirement of all vocational education programs in Washington State, including Business Education.*

Therefore, all students in the Business Education courses will be evaluated on leadership development based on the number of activities in which they participate:

4 activities = A
3 activities = B
2 activities = C
1 activity = D

These leadership activities will constitute ten percent of the course grade.

*WAC Chapter 490-48A-010 Vocational Student Organization: "Leadership development in vocational programs in secondary schools, vocational technical institutes, and community colleges will be made available to all students as an integral part of the instructional programs." State of Washington, Superintendent of Public Instruction, Standards for Vocational Education Programs 81-4B, item number 5: "Leadership development through planned activities providing for transition from school to job must be an integral part of the instructional program. The vocational education student organizations meet this need."

LEADERSHIP DEVELOPMENT

Leadership activity report forms must be requested from the business education teacher, completed by the student, and signed by the adult in charge of the activity. Completed leadership activity forms are to be kept by the student until he/she has met his/her leadership development goal. The completed forms are then to be stapled to this cover sheet and turned in to one of the business education teachers. To receive leadership development credit, a particular activity may not be repeated (i.e., each activity can receive credit only one time per semester).

SUGGESTED LEADERSHIP ACTIVITIES

FBLA Officer
FBLA Member (dues paid)
FBLA Conferences: District Fall Leadership Conference
FBLA Fall Leadership Conference
FBLA Spring Leadership Conference**
FBLA State Leadership Conference**
FBLA Fundraiser
FBLA Meeting
Ninety percent of Excellence Points*
Prepare bulletin board for classroom
Arrange for and introduce guest speaker
Volunteer to work on student body committee
Volunteer for community service/charity activity
Attend a meeting of a professional organization: Kiwanis, Advisory Committee, Chamber of Commerce, Rotary Club, etc.
Interview a person in a business and office position not related to the educational field
Review history, officers' duties, constitution, etc., of a professional organization/vocational organization
Report: (two typewritten pages, or three- to five-minute oral) Examples: (1) Attend meeting of a professional organization, such as Kiwanis, Chamber of Commerce, Vocational Department Advisory Committee, etc. (2) Review history, officers' duties, constitution, etc.
Design your own project with instructor's approval

*Excellence Points refer to five points daily that each student receives for being in class, on time, prepared to go to work, and using appropriate human relations skills.

**FBLA State and National dues must be paid to attend this conference. (1986-87: State - $3.00 due December 1, 1986 to compete at State Leadership Conference; February 1, 1987 to attend State Leadership Conference: National - $4.00)

LEADERSHIP ACTIVITY REPORT

Please circle name(s) of your business instructor(s) and appropriate class period(s).

Teacher A	1 2 3 4 5 6
Teacher B	1 2 3 4 5 6
Teacher C	1 2 3 4 5 6

STUDENT NAME_____ DATE OF ACTIVITY_____

DESCRIPTION OF ACTIVITY_____

_____

_____

Keep this form until you have completed all leadership activities for the semester. Staple these forms to the cover sheet and turn in to your instructor.

_____
Adult Supervisor's Signature

_____
Title

Example #2

GUIDELINES FOR LEADERSHIP DEVELOPMENT COMPONENTS

Leadership development components, defined by student learning objectives, should be included in each course in the Business Education curriculum.

The Business Education teacher should keep the following in mind when teaching to these objectives: (1) students must be aware of the objectives being taught; (2) the teacher needs to be creative in developing and using leadership activities in order to avoid duplication of activities used in other business courses; and (3) records of leadership activities must be kept for each student in each course.

These guidelines are offered to provide direction for teachers. Included are general operating procedures, suggestions for implementation, strategies for teaching leadership development, and some suggested activities tried by other teachers.

GENERAL PROCEDURES

1. Select a maximum of three of the traits/work habits listed in the objectives for emphasis in each course.

2. Determine no more than four indicators for each trait/work habit.

3. Inform students of the leadership development emphasis for each course, the indicators that will be observed, and the manner of grading and recording.

4. Give students appropriate instruction.

5. Follow up with observation, grading and recording.

IMPLEMENTATION

1. In a lab setting: Take the course outlines for each of the courses being taught in the lab and make a composite list of the topics to be covered. Cross-reference the list with the district recordkeeping form for Leadership Development.

2. Identify activities for teaching each topic. Resources might be textbooks, periodicals, conference and inservice sessions and materials, district leadership development activities list, fellow educators.

3. Designate specific days of the month as days when everyone in class will work together on a leadership development activity (e.g., small group task, film, group project, etc.).

4. Teach students to train other students.

5. Appoint class leaders/managers that rotate on a regular (weekly, perhaps) basis. Tasks assigned to these leaders might include recordkeeping duties, proofreading or concept checking, etc.

6. Use simulations, practice sets or case studies to aid in teaching leadership development.

7. Devise simulations using structured groups of students.

8. Allow students to keep their own leadership development records.

STRATEGIES FOR TEACHING LEADERSHIP DEVELOPMENT

1. Use examples and resources from the business community.

2. Draw from personal work experience--the teacher's or the students'.

3. Use seminars and class discussion.

4. Use audio-visual presentation and follow-up with discussion or a reaction paper.

5. Use individual "field trip" assignments with follow-up being an oral or written report to class.

LEADERSHIP TRAITS/HABITS FOR EMPHASIS IN EACH COURSE

1. Dependability (e.g., attendance, punctuality, tools, deadlines).

2. Self-discipline (e.g., correct technique, working with distractions, paying attention, respect for equipment).

3. Following oral instructions.

4. Following written instructions.

5. Problem-solving techniques.

APPENDIX B

Example #1

KEYBOARDING TECHNIQUE EVALUATION

Student Name_____

Rating Scale: A = 4 points
B = 3 points
C = 2 points
D = 1 point

	SCORE	X VALUE	EQUALS	Comments
Position at the Machine		2		
Stroking the Keys		3		
Eyes on Copy		5		

Total Points_____ Letter Grade_____

Position at the Machine:

Back straight, leaning forward slightly
Arms almost motionless, very steady
Elbows relaxed, loose, close to body

Stroking the Keys:

Using correct fingering
Fingers curved, never straightened out
Wrists level, off machine
Stroking crisp, brisk, decisive

Eyes on copy:

Eyes steady, always on copy (not on paper, keyboard, fingers, etc.)
Operates return key without looking up

APPENDIX B

Example #2

KEYBOARDING 1

TECHNIQUE EVALUATION FORM

NAME _____ DATE _____

FINGERS CHECK

1. Curved Fingers _____
2. Typing on Tips _____
3. Fingers Straight _____
4. Using Correct Fingers _____
5. Little Fingers on Return/Enter & Tab Keys _____

HANDS

1. Quiet--No excess motion _____
2. Fingers stay on home row _____
3. Wrists low but not resting on machine _____

TOTAL CHECKS _____

GRADE _____

COMMENTS:

_____

_____

_____

_____

APPENDIX B

Example #2

KEYBOARDING 1

TECHNIQUE EVALUATION FORM

NAME_____ DATE_____

POSTURE AT MACHINE	CHECK
1. Sits back in chair	_____
2. Appropriate distance from machine	_____
3. Feet on floor	_____
TOUCH TYPEWRITING	
1. Eyes on copy (Counts double)	_____ _____

TOTAL CHECKS _____

GRADE _____

COMMENTS:

_____

_____

_____

_____

APPENDIX B

Example #3

TECHNIQUE CHECK SHEET

NAME _____

PERIOD/SECTION _____

GRADING SCALE: ACCEPTABLE = 5 points
UNACCEPTABLE = 0 points

31 - 35	A
26 - 30	B
21 - 25	C
15 - 20	D

POSTURE . . . . . _____

COMMENTS:

KEYSTROKING . . . . . _____

COMMENTS:

SPACE BAR . . . . . _____

COMMENTS:

CARRIER RETURN . . . . . _____

COMMENTS:

SHIFT KEY . . . . . _____

COMMENTS:

EYES ON COPY . . . . . _____

COMMENTS:

EFFORT/ATTITUDE . . . . . _____

COMMENTS:

TOTAL/GRADE . . . . . _____

APPENDIX C

STRAIGHT COPY GRADING SCALES
(One-, Three-, and Five-Minute Timings)

Provided below are examples for grading timed writes on straight copy material. An instructor may want to use one of the examples or a combination. It should be remembered that these scales indicate progress at end of grading period.

EXAMPLE #1
(Straight-Copy Timed Writes)

First Semester (3-minute timing)		Second Semester (5-minute timing)	
A	35+	A	45+
B	30 to 34	B	40 to 44
C	25 to 29	C	35 to 39
D	22 to 24	D	30 to 34

Use GROSS words per minute (do not subtract errors). Students are allowed a maximum of two errors per minute for a gradable timed write.

EXAMPLE #2
(Straight-Copy Timed Writes)

Second Semester
(5-minute timing)

A	45+
B	38 to 44
C	31 to 37
D	25 to 30

(Use 5-error cut-off method, counting words up to the sixth error)

EXAMPLE #3
(Straight-Copy Timed Writes)

First Quarter
(1-minute timing)

Errors	A	B	C	D
0	30	26	22	18
1	32	28	24	20
2	34	30	26	22

APPENDIX C, Continued

EXAMPLE #3, Continued
(Straight-Copy Timed Writes)

Third Quarter (5-minute timing)					Fourth Quarter (5-minute timing)				
Errors	A	B	C	D	Errors	A	B	C	D
0	35	31	27	23	0	42	38	34	30
1	37	33	29	25	1	44	40	36	32
2	39	35	31	27	2	46	42	38	34
3	41	37	33	29	3	48	44	40	36
4	43	39	35	31	4	50	46	42	38
5	45	41	37	33	5	52	48	44	40
6	47	43	39	35	6	54	50	46	42
7	49	45	41	37	7	56	52	48	44
8	51	47	43	39	8	58	54	50	46
9	53	49	45	41	9	60	56	52	48
10	55	51	47	43	10	62	58	54	50

APPENDIX C, Continued

NUMBER COPY GRADING SCALE

(Number Copy Timed Writes)

Guidelines for one-minute timings on number copy on alpha-numeric keyboard (2 errors allowed):

Quarter 1		Quarter 2		Quarter 3		Quarter 4	
A	20+	A	25+	A	30+	A	35+
B	17 to 19	B	23 to 24	B	27 to 29	B	30 to 34
C	12 to 16	C	16 to 22	C	20 to 26	C	23 to 29
D	8 to 11	D	11 to 15	D	15 to 19	D	18 to 22

SUGGESTED GRADING AREAS AND PERCENTAGES FOR OVERALL GRADING

The examples below provide possible methods of assigning an overall grade on the topics covered in a keyboarding class. An instructor may want to modify the examples to fit his/her particular classroom situation.

EXAMPLE #1

	First Semester	Second Semester
Technique	30%	-0-
Speed & Accuracy	20%	20%
Daily	20%	40%
Quizzes/Tests	20%	30%
Leadership	10%	10%

EXAMPLE #2

	First Semester	Second Semester
Technique	30%	30%
Speed & Accuracy	20%	20%
Applications/Tests	30%	30%
Leadership	20%	20%

APPENDIX D

SOME AVAILABLE SOFTWARE RESOURCES

For Drill and Skill Development

Basic Information Keyboarding Skill--South-Western Publishing Co.

Typing Tutor--Microsoft

Microcomputer Keyboarding--South-Western Publishing Co.

Alphabetic Keyboard--South-Western Publishing Co.

Microcomputer Keypad Operations--South-Western Publishing Co.

MicroPace--South-Western Publishing Co.

K-Bit--K-Bit Consulting & Software

For Word Processing Skill Development

Appleworks--Apple

Zardax--Computer Solutions

WordStar--Microsoft

AppleWriter--Apple

Word Handler--Silicon Valley Software

PCWrite--Public domain--Quicksoft

Superscript--Precision Software

Superscripsit--Radio Shack, Inc.

Writing Assistant--IBM

MultiMate--MultiMate, Inc.

Teachers should contact publishers for current publications of software related to the subject matter being taught.

COMPUTER KEYBOARDING SOFTWARE EVALUATION FORM

TITLE: _____ SERIES TITLE: _____

DISTRIBUTOR: _____ TOTAL COST: _____ COPYRIGHT DATE: _____

INPUT MODE: Cassette _____ 5 1/4 " Disk _____ Cartridge _____ Other _____

PURPOSE

ABILITY/GRADE LEVEL _____ SUBJECT(s) _____ TOPIC(s) _____

INSTRUCTIONAL PURPOSE: (REMEDIATION) (STANDARD INSTRUCTION) (ENRICHMENT) (ASSESSMENT)

INSTRUCTIONAL TECHNIQUE: (DRILL & PRACTICE) (TUTORIAL) (SIMULATION) (GAME) (TESTING) (REMEDIATION)

FOR: (DEPT. USE) (CLASSROOM USE) (DON'T BUY)

PRIORITY: High ___ Medium ___ Low ___

EVALUATOR: _____

SCHOOL: _____ DATE: _____

PURCHASE RECOMMENDATION SUMMARY

	E	S	NS	NA
CONTENT				
INSTRUCTIONAL DESIGN				
RECORDKEEPING/ MANAGEMENT				
EASE OF USE				
AFFORDABILITY				

E = Excellent S = Satisfactory NS = Not Satisfactory NA = Not Applicable

---

EVALUATION

POTENTIAL USES _____

_____

MAJOR STRENGTHS _____

_____

MAJOR WEAKNESSES _____

_____

E = Excellent

S = Satisfactory

NS = Not Satisfactory

NA = Not Applicable

EASE OF USE

	E	S	NS	NA
Users can operate easily and independently.				
Teachers can integrate software easily.				
Software is reliable in normal use.				
User reference manuals are easily understood.				
"HELP" menus are available.				
Software can be exited by student or automatically when appropriate.				
Software has easy entry and exit commands.				

CONTENT

	E	S	NS	NA
Computer is used appropriately.				
Worthwhile learning experience is provided.				
Student learning effectively stimulated.				
Difficulty level is appropriate to student level.				
Software achieves defined purpose.				
Software meets curriculum objectives.				
Software is useful and supports teacher instruction.				
Instructions are accurate.				
Content is clearly written and well indexed.				
Content is free of stereotypes.				
Software encourages proper keyboarding techniques (Appendix B).				

RECORDKEEPING AND MANAGEMENT

	E	S	NS	
Maintains accurate records of student response.				
Provides and records feedback to the student.				
Graphically depicts student progress.				
Maintains security of student records.				
Includes diagnostic/evaluative testing.				
Generates further practice.				
Allows printout and screen display of student records.				

INSTRUCTIONAL DESIGN

	E	S	NS	NA
Learner objectives are established.				
Feedback is effective and appropriate.				
Amount of time to perform functions is minimal.				
Learner can control rate and sequence.				
Instruction of student learning is active rather than passive.				
Program can be used independently.				
It can be adjusted by user for local needs.				
Instructions can be skipped.				
It branches according to student responses.				
Clear, direct warnings given when editing material.				
Disk fail warning given.				

AFFORDABILITY

	E	S	NS	NA	COST
Price of software					
Price of manuals/cassettes					
Extra student disks needed					
Disk copying restrictions					
Extra disk drives needed					
Extra memory required					
Compatibility with present hardware					
Knowledgeable, cooperative, vendor support					
Replacement disk available					
Newsletter					
Hotline availability					
User groups					

APPENEDIX E

TEN-KEY PAD DIGIT DRILL

EXAMPLE # 1*

450 (3)	295 (3)	300 (3)	14,500 (5)	279 (3)
300 (3)	175 (3)	5,400 (4)	4,300 (4)	325 (3)
400 (3)	5,000 (4)	9,550 (4)	140 (3)	32,715 (5)
275 (3)	2,600 (4)	105 (3)	5,000 (4)	1,340 (4)
120 (3)	330 (3)	530 (3)	230 (3)	2,650 (4)
1,050 (4)	280 (3)	90 (2)	11,000 (5)	700 (3)
2,010 (4)	85 (2)	156 (3)	69 (2)	55 (2)
3,000 (4)	79 (2)	5,500 (4)	58 (2)	9 (1)
198 (3)	3,000 (4)	945 (3)	3,500 (4)	6,000 (4)
140 (3)	2,400 (4)	3,750 (4)	75 (2)	4,300 (4)
257 (3)	4,042 (4)	3,284 (4)	234 (3)	1,127 (4)
1,800 (4)	1,714 (4)	390 (3)	894 (3)	500 (3)
10,000	20,000	30,000	40,000	50,000
(40)	(80)	(120)	(160)	(200)

263 (3)	5,991 (4)	8,174 (4)	6,414 (4)	608 (3)
174 (3)	381 (3)	2,154 (4)	80 (2)	922 (3)
154 (3)	636 (3)	9,611 (4)	3,577 (4)	7,013 (4)
1,411 (4)	277 (3)	303 (3)	8,109 (4)	9,852 (4)
142 (3)	1,303 (4)	207 (3)	684 (3)	498 (3)
407 (3)	2,027 (4)	924 (3)	426 (3)	5,946 (4)
3,624 (4)	166 (3)	122 (3)	284 (3)	9,637 (4)
261 (3)	563 (3)	199 (3)	60 (2)	61 (2)
264 (3)	5,364 (4)	488 (3)	7,608 (4)	4,955 (4)
1,378 (4)	2,954 (4)	7,367 (4)	5,438 (4)	701 (3)
1,671 (4)	305 (3)	351 (3)	699 (3)	9,735 (4)
251 (3)	33 (2)	100 (3)	6,621 (4)	72 (2)
10,000	20,000	30,000	40,000	50,000
(240)	(280)	(320)	(360)	(400)

*This example counts digits entered only.

APPENDIX E

TEN-KEY PAD DIGIT DRILL

EXAMPLE #2*

720 (4)	110 (4)	196 (4)	324 (4)	550 (4)
1,358 (5)	328 (4)	475 (4)	576 (4)	31,809 (6)
401 (4)	1,455 (5)	238 (4)	4,189 (5)	147 (4)
648 (4)	697 (4)	942 (4)	200 (4)	284 (4)
1,723 (5)	805 (4)	14,178 (6)	409 (4)	336 (4)
450 (4)	7,324 (5)	356 (4)	864 (4)	9,405 (5)
1,693 (5)	189 (4)	990 (4)	22,237 (6)	764 (4)
214 (4)	1,425 (5)	247 (4)	102 (4)	239 (4)
597 (4)	820 (4)	294 (4)	384 (4)	118 (4)
300 (4)	344 (4)	975 (4)	567 (4)	530 (4)
1,362 (5)	765 (4)	4,906 (5)	981 (4)	347 (4)
534 (4)	5,738 (5)	6,203 (5)	9,167 (5)	5,471 (5)
10,000	20,000	30,000	40,000	50,000
(53)	(106)	(159)	(212)	(265)

1,474 (5)	375 (4)	3,924 (5)	734 (4)	210 (4)
320 (4)	249 (4)	883 (4)	120 (4)	387 (4)
186 (4)	4,560 (5)	870 (4)	965 (4)	450 (4)
558 (4)	196 (4)	235 (4)	830 (4)	132 (4)
120 (4)	2,724 (5)	368 (4)	7,211 (5)	738 (4)
1,983 (5)	301 (4)	958 (4)	376 (4)	38,902 (6)
246 (4)	5,873 (5)	130 (4)	810 (4)	742 (4)
578 (4)	320 (4)	5,568 (5)	18,345 (6)	337 (4)
1,921 (4)	875 (4)	344 (4)	558 (4)	965 (4)
847 (4)	110 (4)	221 (4)	102 (4)	540 (4)
287 (4)	384 (4)	556 (4)	284 (4)	2,379 (5)
1,480 (5)	4,033 (5)	15,943 (6)	9,665 (5)	4,218 (5)
10,000	20,000	30,000	40,000	50,000
(318)	(371)	(424)	(477)	(530)

*This example counts digits, add key, and total bar.

APPENDIX F

TEN-KEY PAD GRADING SCALES

Provided below are examples for timed writes on numerical copy on a ten-key pad such as the numeric pad on a calculator or a computer.

EXAMPLE #1

The following grading scale uses a percentage for basis of a grade:

130 - 150 digits per minute (dpm)	90% accuracy	= A
110 - 129 digits per minute	90% "	= B
90 - 109 digits per minute	90% "	= C
70 - 89 digits per minute	90% "	= D

EXAMPLE #2

The following grading scale uses an error limit for basis of a grade. Four errors in four minutes are allowed (one error per minute).

100 + dpm = A

90 - 99 dpm = B

80 - 89 dpm = C

70 - 79 dpm = D

EXAMPLE #3

Grading: With three to five chances to pass, it is suggested that the one-minute timings on the ten-key unit be graded on the following scale with a two-digit error limit.

110+ = A

96 - 109 = B

80 - 95 = C

70 - 79 = D

GLOSSARY

Special words and terms used in data entry are unique to the field. To give students a working definition of some of these terms, the following glossary is provided. A more complete glossary may be found in the instruction booklets accompanying hardware or software packages.

Alpha-numeric--Referring to data that consists of numbers and alphabetic characters.

Boot--To bootstrap (enter) a routine, especially the operating system of a computer, into main memory.

Buffer--An area of storage used to temporarily hold data being transferred from one device to another. A buffer is used to compensate for the different rates at which hardware devices process data: for example, a buffer would be used to hold data waiting to print, in order to free the CPU for other tasks, since it processes data at a much faster rate.

Clipboard--A process on some programs to allow merging of documents or programs.

Continuous Forms--Forms fed into a printer on a continuous roll with perforations at regular intervals.

CPU--Abbreviation for CENTRAL PROCESSING UNIT. Every computer has a CPU. It is where instructions are fetched, decoded, and executed, and the overall activity of the computer is controlled.

CRT--Abbreviation for CATHODE RAY TUBE; a screen like that of a television receiver, used in computer systems for viewing data. A CRT may be used in place of printed copy and, with attached keyboard, forms a terminal.

Cursor--A visual position indicator on a display terminal, such as a CRT, that moves along with each character as it is entered from the keyboard. It is where a character is to be entered or replaced.

Daisy-Wheel Printer--An impact printer that prints fully formed characters one at a time by rotating a circular print element composed of a series of individual spokes, each containing two characters, that radiate out from a center hub: daisy-wheel printers are widely used with word processors.

Data--The numbers, facts, concepts, etc., to be processed by a program--although any information input to a computer system is considered data.

Default--A value, parameter, attribute, or option that is assigned by the program or system when another has not been specified by the user.

Delete--To take out words, sentences, or lines already in text.

Disk, Disc--Short form of MAGNETIC DISK. A platter resembling a phonograph record or cassette, coated with a material capable of being magnetized to store bits of data; sometimes called a diskette or floppy disk.

Disk Drive--A unit that reads and writes data stored on a disk.

Documentation--The user's instructions that accompany microcomputer hardware and software.

DOS--Acronym for DISK OPERATING SYSTEM.

Dot-Matrix Character--A printed character formed of dots so close together that it gives the impression of having been printed by uninterrupted strokes.

Edit--To manipulate programs, data, or text.

File--A collection of logically related records dealt with as a unit.

Footer--Information formatted to appear automatically at the bottom of every page, such as a page number.

Format--The orderly arrangement of data, such as a list or a table.

Friendly (User Friendly)--A term used to describe computer hardware and software which is easy to understand and use, even by beginners.

Function Key--On a keyboard, a key used to perform a function for the operator, such as an ENTER KEY.

Global Search--Computer goes through document to find a word for which the operator is looking.

Hands-On--Designating an activity or training that involves the actual operation of a piece of hardware.

Hard Copy--Computer output that is printed on paper and can be read and handled by people.

Hard Return--Using return or enter key at end of line to wrap or scroll.

Hardware--The physical equipment and components in a computer system.

Header--Information formatted to appear automatically at the top of every page, such as a page number.

Information Processing--All the steps involved in completing a communication on electronic media: input, processing, output, editing and revising, distributing and storing in memory.

Insert--To add information to existing text.

Justification--The right margin is even, with all lines ending at the same column position.

K (KILO)--Equals 1,000 characters. With the microcomputer it is speaking of the memory capability.

Keyboarding--Entering alpha-numeric data on a typewriter-like keyboard using the touch system.

Main Memory--None of the computer's input and output devices can handle data fast enough to keep up with the central microprocessor, which does millions of operations every second. Data which is ended by the microprocessor, as well as output data it sends back, are therefore handled by the computer's highspeed main memory.

Mail Merge--See Merge.

Memory--A device that can store data recorded in it and from which the data can be retrieved--usually refers to the MAIN MEMORY of a computer.

Menu--A list of choices from which to pick. Often a component of friendly computer programs.

Merge--The process of combining two or more ordered files into one similarly ordered file.

Microcomputer--A small table-top computer.

Minimum Standard--The lowest "D" grade; passing.

Network--A system consisting of a computer (or computers) and the connected terminals and related devices, such as modems and input/output channels.

Num Lock--A key which works similar to a Caps Lock key which allows numbers only to be used on a numeric pad when the numeric pad has another function as well.

Numeric Pad--A set of numeric keys on some terminals, adding machines, calculators, or keypunches that are grouped together in a rectangular block so that numeric data can be entered more efficiently; sometimes referred to as a ten-key pad.

Output--The data that results from computer processing.

Printer--An output device that converts electronic signals from the computer into human-readable form or HARD COPY.

Printout--Computer output printed on paper.

Program--A set of coded instructions directing a computer to perform a particular function.

Reformat--To change the predefined arrangement and location of data items within a storage unit

Scroll--To advance (or go back) a specified number of lines in a file that is being displayed on a CRT.

Software--Programs, languages, and/or routines that control the operations of a computer in solving a given problem.

Storage Device--Any of various devices capable of retaining data for relatively long periods of time, such as a punch card, disk, or tape.

Text Editing--Proofreading and revising material using a word processor.

Touch Keyboarding (Touch Typewriting)--input on an electric or electronic keyboard without constant looking at the keyboard such as when reading from printed copy or composing at the keyboard

Wraparound--A process whereby a system adjusts margins automatically without the operator pressing a Return key or an Enter key.